DATA REQUEST #24
VISIBLE PLUME MODELING

BACKGROUND

Staff intends to conduct a plume modeling analysis using the Combustion Stack Visible Plume (CSVP) model and the Seasonal Annual Cooling Tower Impact (SACTI) model for the El Centro project, as is done for all projects with cooling towers.

DATA REQUEST

24. Please provide the values for heat rejection (MW/hr), exhaust temperature, and exhaust mass flow rate that affect cooling tower vapor plume formation for a range of ambient conditions representing reasonable worst-case operating scenarios. At a minimum, please fill in all blanks in the table below. Staff intends to model the cooling tower using hourly estimated exhaust conditions based on the hourly ambient conditions of the meteorological file. Staff will assume saturated cooling tower exhaust at the exhaust temperature determined through interpolation for the hourly ambient conditions. Therefore, additional combinations of temperature and relative humidity, if provided by the applicant, will more accurately represent the cooling tower exhaust conditions.

Parameter	**Cooling Tower Exhausts**		
Number of Cells			
Cell Height			
Cell Diameter			
Tower Housing Length			
Tower Housing Width			
Ambient Temperature	20 °F	59 °F	95 °F
Ambient Relative Humidity			
Heat Rejection (MW/hr)			
Exhaust Temperature (°F)			
Exhaust Mass Flow Rate (lb/hr)			

DATA RESPONSE

A performance model was developed for the tower to complete the requested table.

Docket Number 06-SPPE-2
First Round Data Requests
El Centro Unit 3 Repower Project
July 2006

DATA REQUEST #24
VISIBLE PLUME MODELING

Parameter	**Cooling Tower Exhausts**		
Number of Cells	four (4)		
Cell Height	31 ft		
Cell Diameter	18 ft		
Tower Housing Length	123 ft		
Tower Housing Width	42 ft		
Ambient Temperature	20°F	59°F	95°F
Ambient Relative Humidity	90	60	26
Heat Rejection (MBtu/hr)	285.757	277.818	314.254
Exhaust Temperature (°F)	75.79	84.94	97.2
Exhaust Mass Flow Rate (lb/hr)	8,942,000	10,508,000	10,202,000

Notes: The 20^0F and 59^0F Ambient Cases are without supplementary firing.
The 95^0F ambient case is with supplementary firing.